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TABLE OF CONTENTS.

PAGE.

Editorial Article:—Transplanting Trees . . . 431
Climbing Plants on Boston Buildings . . . *Sylvester Baxter.* 432
Foreign Correspondence:—London Letter . . . *W. Watson.* 433
New or Little-known Plants:—A Hybrid Walnut-tree. (With figure.) *C. S. S.* 434
Plant Notes . . . 436
Cultural Department:—Saving Seed . . . *Professor Taft.* 437
Indoor Work in Autumn . . . *W. H. Taplin.* 437
The Linarias . . . *Emile Mische.* 438
Notes from Baden-Baden . . . *Max Leichtlin.* 438
Forcing Strawberries . . . *William Scott.* 438
Correspondence:—The Persimmon . . . *J. W. B.* 439
Birds which Injure Apples . . . *J. G. Jack.* 439
A Double May-weed . . . *Bessie L. Putnam.* 439
Recent Publications . . . 439
Notes . . . 440
Illustration:—Juglans regia × cinerea, Fig. 69 . . . 435

Transplanting Trees.

A CORRESPONDENT inquires whether deciduous trees transplanted after the 1st of November will live in this latitude. To which we reply that, if every needed preparation has been made and a tree is properly lifted and set, it can be removed successfully as long as the ground continues warm enough to insure the output of fresh rootlets in sufficient numbers to supply the water which is wasted from the trunk and branches by evaporation during the winter. But whether or not a tree will be likely to survive—that is, whether its chances of life barely outweigh the dangers of death in the operation of removal—is not the question which an enterprising planter ought to discuss. He will not be satisfied with a tree simply because it has vitality enough left to put forth leaves. What he wants is a tree with an unshattered constitution, a vigorous life, a promise of longevity and conditions which insure its best development in size, in beauty and in characteristic expression. Small trees can be moved successfully at any time of year by one who knows just how to do it. But in this latitude the transplanting of trees ought not to be postponed until as late as the middle of November. Certainly, no tree ought to be transplanted after this date unless the ground has been thoroughly and intelligently prepared beforehand. If trees must be dug or purchased now it is better to heel them in carefully and at once begin to prepare the place where they are to live permanently.

We have often explained why a large pit should be excavated for a tree. A wholesome tree needs a great deal of food, and it must stand in a soil whose texture will make that food available. Where trees are to be planted in groups the whole ground should be trenched to a depth of two feet, and for a single long-lived tree an excavation which is ten or fifteen feet across and three feet in depth is none too spacious. The surface-soil should be placed to one side and the stones removed from the hardpan. This subsoil should be returned to the pit, and it will be all the better if a little rich soil and peat can be mixed with it, and then the surface-soil should be placed on the top as before. During the winter all this will settle and become firm, while the action of the frost will reduce the size of the particles. Next spring the trees can be lifted and placed in a small hole made in the centre of the large one, care being taken as the roots are covered to ram the ground tightly about them. If we wait till spring to dig these holes, or if the tree is planted in them now when they are freshly dug, the soil will settle away from the roots as the tree sways in the wind, or the rain will wash it away, leaving air-spaces about the roots, which are fatal to the tender feeding fibres already formed and which offer no encouragement for others to take their places. If the trees are properly heeled in a sheltered place to prevent evaporation, a sufficient number of roots will form to keep the branches plump during the winter; the scars, where bruised roots have been cut away, will have become calloused over, and they will suffer no shock when removed to their abiding place in spring, but will continue to grow as if they never had been disturbed. If trees are to be brought from a distance it is, therefore, better to procure them in the autumn than to wait until spring, and everything will be at hand for prompt action at a time when work of many kinds is pressing. If it is too late to secure the trees in time to heel them in while the ground is still warm and open, they should be procured at once and wintered in a cellar or pit. If they are heeled in they should be placed in a rather shallow trench and in an inclined position, and far enough apart to allow fine soil to penetrate every portion of the space occupied by the roots without leaving any unfilled interstices. The ground, of course, should be dry and well drained; no stones, clods or sods should be used in the filling, nothing but finely pulverized soil. A portion of the stems, as well as the roots, should be buried and the surface rounded, and it is better to dig a trench around the whole area occupied by the tree-roots, because mice will not be liable to push up under the snow against an inclined bank of earth.

All this is elementary counsel which has been more than once given in this journal, but the letters we receive and the half-starved sickly trees we see on every side prove that there is little danger of repeating it too frequently. Many a man who realizes the necessity of a skilled gardener to plant his flower-border, feels that any laborer who can handle a spade is competent to plant a tree. He keeps a gardener busy all the season among his flower-beds, but never dreams that a tree demands a moment's attention after it is once set in the ground. Even farmers, who know the value of care and cultivation for their crops in field and garden, will plant an orchard, leave it for years without any care, and then wonder why their unhealthy trees yield no crops of fruit. The fact is, that one tree well planted, either for ornament or use, is better than a dozen carelessly placed in the ground. The time and money spent in tree-planting is worse than wasted unless the work is done in the best manner from the very beginning, and unless the care which follows is intelligent, determined and unceasing.

Upon the details of this care it is not our present purpose to enlarge. We have over and over explained why every young tree should have room for its roots to feed; room for its branches to spread and for its leaves to catch the air and sunshine; why it should be anchored fast until its roots have taken firm hold of the ground; why its wounds should be covered to exclude fungi, which would carry death into its trunk; why the surface of the soil about it should be kept loose or mulched to guard the roots against injury by drought or sudden changes of temperature; how the rubbing away of a leaf-bud here and there in summer or the pinching of a young shoot will preserve the symmetry of the tree and prevent the necessity of more serious amputation when it gets older, with other rudimental teaching which should never be neglected. But, perhaps, novices who have already planted young trees should be reminded that this is a favorable time, just as the leaves have fallen, and before icy weather makes work among them unpleasant, to cut away limbs which chafe each other or to remove dying branches from such as seem to

be on the decline. It is a good time, too, for a walk of inspection through young plantations to mark the trees which have been overshadowed and stunted by their stronger neighbors or crowded out of shape. Such trees should be removed to give the other ones free chance of expansion, for whenever trees begin to interfere and struggle with each other for the mastery, it is best to stop the battle at once.

This may seem to be wandering from our text, but it should be remembered that transplanting is only one event in the life of a cultivated tree, and that after-care is quite as important. Of course, every precaution should be used that its vitality may receive no shock in removal, but it should be fed and made happy in its new surroundings as systematically and judiciously as if it were a growing animal, or the result will be a lasting disappointment and regret.

Climbing Plants on Boston Buildings.

PROBABLY nowhere else in this country does the service performed by climbing and clinging plants in clothing and adorning the walls of buildings receive such good illustration as in and around Boston. Ampelopsis tricuspidata was first domesticated here, and has so long been a striking feature of this city as to gain for it throughout the country the familiar name of "Boston Ivy." This name, however, is seldom heard here, where it is most commonly known as the "Japanese Ivy" or the "Japanese Ampelopsis."

Ampelopsis tricuspidata had probably been cultivated hereabout for several years before it became particularly noticeable, but its popularity dates back to the Centennial year of 1876. Although for years familiar with all parts of the city and a close observer of such things, I had never noticed this plant until my return in 1877, after an absence of a year or so, when I was at once struck by its prevalence. It did not become remarkably common hereabout until about 1880. Now, however, it is seen everywhere, and is even more prevalent than its cousin, our beautiful native Virginia Creeper. It has become as characteristic of our city and suburban scenes as the White Pine is of our rural New England landscape, and one of our foremost authorities once told me that he regarded it as the greatest horticultural acquisition of the century.

Occasionally its use is excessive, but its luxuriant habit is seldom encouraged to an undesirable extent. This is probably due to the fact that one of its most conspicuous services consists in the concealment, or the amelioration, of architectural ugliness, and, fortunately, the people most liable to employ it to excess are generally the ones most responsible for bad architecture. Ugly objects are so generally made graceful and picturesque by the kindly offices of the Japanese Ampelopsis that the instances of its overliberal use are usually merciful concealments. The Japanese Ivy, or, still better for this particular purpose, the Virginia Creeper, could be usefully employed to drape the electric-wire poles, whose gaunt interminable processions make hideous the highways throughout the country, and convert them, for a large portion of the year, at least, into objects of beauty, if the necessities of the linemen, with their climbing-spurs, did not forbid. This might, however, be done with poles that require no climbing, as the posts that support the trolley-wires of the electric-railways, particularly along a road that has been adorned with central-lawn spaces, like the boulevards of Beacon Street or Commonwealth Avenue.

As a means for the mitigation of bad architecture, the Japanese Ampelopsis on our Museum of Fine Arts furnishes an instructive example, though it is not carried far enough. It clambered bravely over the ugly walls of parti-colored terra cotta and brick, and for a while so nearly effaced the unspeakable reliefs of the second story as to give them the charm of indefiniteness. But the trustees have since restricted the creeper to the first story.

The excessive use of this plant finds unfortunate illustration on the walls of the home of the Somerset Club, where it was earliest conspicuous, and admired. Upon the plain, but noble, façade of whitish granite the decorative effect of the climber was at first indescribably charming, whether in the verdure of spring and summer, the brilliant hues of autumn, or the delicate tracery of its branches in winter, always showing the contrast of delicate, clinging growth against the light-toned, massive masonry. But now the rampant growth covers nearly every foot of the beautiful front, depriving the picture of the charm of contrast, and in the growing season imparting an aspect of instability to the substantial structure, particularly when the wind trembles the screen of foliage. At such times a building that is entirely covered with verdure becomes apparently as weak as its external mantle, recalling the effect of the scenery in a theatre when the actors chance to brush against it and shake its castles, fortresses and cottages.

Next door to the Somerset Club the front of a handsome old brick mansion is exquisitely draped with the different forms of foliage, and the harmonious blending and interweaving of the distinct shades of green of the Japanese Ampelopsis, the Virginia Creeper and the Wistaria. Against a background of rich old red brick the effect of the clinging and trailing growth is superb, and makes one of the best examples of verdurous house-clothing in Boston.

Probably the building most famous for its exuberant, but not in the least excessive, growth of Ampelopsis is the Old South Meeting-house, where it creeps over an enormous expanse of gray old walls and high up on the tower, relieving the severity of the Puritan architecture with its gentle touch. The suggestion of nature amid the piles of neighboring brick and stone in the heart of the business section of the town does much to heighten the charm of the Old South's garb of greenery. And this leads me to express dissent from only one point in the admirable editorial on the general subject of the use of clinging growths in combination with architecture that appeared in Garden and Forest a few months ago. The New York Post-office was instanced as one of the buildings where such a growth would not be in place. But to my mind it would be peculiarly appropriate there, for the reason that the architecture of that building is intensely offensive. If, by any means, an ample growth of Ampelopsis or any other creeping things could only be coaxed to embower a goodly portion of its façades, it would not only mitigate the inartistic character of the edifice, but it would serve to unite it with the remnant of the neighboring City Hall Park, from which its site was unrighteously taken, and in a measure atone for the perpetual affront of its existence.

"The most beautiful thing in all Boston!" is what a friend from the west once declared of the old gateway to the Granary Burying-ground, with its graceful mantle of Japanese Ampelopsis. The old burying-ground itself is a wonderfully calm and peaceful spot. There is an entire absence of the discordant features of some modern cemeteries. The modest gray tombstones of slate that are scattered over its surface seem to be a sort of spontaneous growth, as natural as the Elm-trees in whose shade they stand, and whose beauty has been remarkably improved since the thinning out which they received at the hands of the city Board of Health. The restfulness of this spot is invaluable in the midst of the hurrying throngs of one of the busiest parts of the city. It is hoped that its value from the square-foot point of view shall never tempt its conversion into building lots! The gateway of dark Quincy granite and Egyptian design, in itself is not remarkable. Its nature is symbolized by the inverted torches carved in relief on the two monoliths that form the sides. Over this structure the Japanese Ampelopsis has crept, rounding the sharp angles, draping the arch with the daintiest of leafy fringes, and all but hiding the inverted torches, though leaving in sight the flame of life at their tips—as if to deprive death of its harsh aspect by casting about it

the mantle of nature, while leaving visible life's flame with its immortal promise.

One of the few redeeming features of our extravagantly praised Public Garden is the growth of Virginia Creeper and Japanese Honeysuckle, that converts the iron fence on the western side into a beautiful hedge, and the Japanese Ampelopsis that covers some of its stone posts. This creeper would perform an inestimable service if it were allowed to clamber at will over the bad sculpture in the Public Garden and the Common.

The value of trailing growths for fences is not appreciated in this country as it should be. In Germany the Virginia Creeper is put to simple and effective use for this purpose in urban public grounds. A light, low fence is made of stakes and connecting wires; the Virginia Creeper is trained up each stake and made to form graceful festoons between. Its employment in some such fashion would do good service on a place like the Cambridge Common, for instance, now a bare, unattractive expanse, having a sort of kinship with the New England rustic burying-ground. It is surrounded by a fence composed of unhewn granite posts with squared rails of wood between. Virginia Creeper, Japanese Ampelopsis, and perhaps other twining or climbing plants, might convert this old fence into a thing of beauty. In public parks the requirement for protection of the borders sometimes necessitates guards of wire and stakes along the paths. These are often great disfigurements, and their offensive aspect, in places where they seem to be required permanently, might be at least mitigated by the use of Virginia Creeper after the German fashion.

Another climbing plant from Japan coming into marked favor is Evonymus radicans. While the English Ivy flourishes in places in and about Boston, occasionally growing well over a house-wall or a ledge, it is not thoroughly hardy. Even in Newport, where it seems to be well at home, it is badly winter-killed at times. E. radicans, being evergreen and perfectly hardy, makes a good substitute for the English Ivy in certain respects, but, like its compatriot, the Ampelopsis tricuspidata, it does not take kindly to every soil. It is also slow in getting a good start, and does not clamber so high as the English Ivy, but once well started it grows rapidly in good soil. It is growing luxuriantly over a corner turret of the fine Public Library in Malden, and another conspicuous example of the beautiful effect it can produce is seen in Brookline, where it has mantled a high rustic fence with an arch over a driveway. Altogether, E. radicans has qualities that commend it for extensive use in places where a climbing evergreen is desired. Its general introduction would do much to give interest to the winter aspect of parks and house-grounds.

The Japanese Honeysuckle and our native Bittersweet both have great merits in the adornment of house-walls, and another acquisition from Japan, in the way of a climber, is Clematis paniculata. With its delicate foam-like masses of white flowers, exquisitely aromatic, it has become a feature of the September landscape in various parts of the Boston suburbs. When combined with the Virginia Creeper its effect is strikingly beautiful.

Boston. *Sylvester Baxter.*

Foreign Correspondence.

London Letter.

Cattleya labiata.—It is impossible to overestimate the autumn-flowering form of this plant, now so abundantly represented in gardens, where it has revealed an extraordinary range of variety in the size, form and color of its flowers. Two of the most beautiful and, I am told, most valuable yet seen were shown this week, at the Drill Hall, by Mr. Owen, of Rotheram; they were called Countess Fitzwilliam and Foleyana, the former having large pure white flowers, with the faintest flush of rose on the labellum, the latter being also pure white, save a blotch of pale purple and a tinge of yellow on the front lobe of the labellum. Equally beautiful was a variety of C. Warscewiczii, named Countess of Derby, from the collection of Mr. Statter, Manchester, and remarkable in having pure white sepals and petals, the lip being of the gaudy color of the type. These three exquisite plants were awarded first-class certificates, and were looked upon with envious eyes by all Orchid fanciers who saw them.

Cattleya Brownæ is a new hybrid between C. Bowringiana and C. Harrisoni, raised by Messrs. Sander, and named by them in compliment to Mrs. D. S. Brown, of St. Louis. Only four years have transpired since the seeds were sown, yet the plant has pseudo-bulbs five inches high, each with a pair of leaves, and the last one bearing a single flower as large as C. Bowringiana, but broader in the sepals and petals, and with a flattened front lobe to the lip, the color being deep rosy mauve, with a dash of yellow on the lip. It obtained an award of merit.

Cattleya Wendlandii.—This is a new Veitchian hybrid, its parents being C. Bowringiana and C. Warscewiczii (Gigas). It may be described as a large C. Bowringiana, with a lip like C. labiata, the color being rich rose-purple, with blotches of maroon and yellow on the lower lobe of the labellum. It also received an award of merit.

Lælia præstans alba is a rare little beauty which has been known several years, but is represented only in one or two collections, Mr. Statter's being one. His plant was shown in flower this week, its flowers of the purest snow-white, with a ring-like blotch of crimson-maroon crowning the lip. This is an "albino" of superlative merit.

Dendrobium Phalænopsis alba received an award of merit, the flowers being large, full and wholly white, with a dash of rose on the front lobe of the lip. There were numerous other varieties of it shown, every one of them beautiful. By the bye, it is generally understood that this plant has been introduced in such large quantities from New Guinea, but I am informed on the most reliable authority that they all come from the island of Timor Laut, where the plants first introduced into this country were found by Mr. Forbes, and sent to Kew and Messrs. Veitch, in 1883. There are, however, enough plants in England now to render the habitat of the species of little import to horticulturists.

Gymnogramma Veitchii.—This was shown last Tuesday by Messrs. J. Veitch & Sons, who suggest that it is of hybrid origin from G. decomposita and G. Pearcei robusta. I should rather call it a sport from the first-named, which it generally resembles in all points, except that the fronds are fully a yard high, and the divisions of the pinnæ slightly larger than in typical G. decomposita, which is itself probably a sport from some other cultivated species, having been described by Mr. Baker from a plant grown in the Kew collection and of unknown origin. Another supposed hybrid Gymnogramma was named G. Lathami in 1884, by Moore, in compliment to the Curator of the Birmingham Botanic Garden, who suggested that it was a hybrid between G. decomposita and G. schizophylla. I know no Fern which varies so much when raised from spores as G. decomposita. It is unknown in a wild state.

Fagus Moorei.—This Australian Beech was discovered by Mr. Moore, Curator of the Botanic Gardens, Sydney, New South Wales, who sent specimens of it to Kew in 1867, gathered on "high mountain slopes at the head of the Bellenger at an altitude of 4,000 feet, where it forms dense forests. It attains a height of a hundred and fifty feet, with a clear straight trunk seventy feet high, and is a very beautiful tree with rigid, dark glossy green leaves." It is in cultivation at Kew and Glasnevin, the Kew plants having leaves nearly four inches by two inches, which in texture and glossiness are more suggestive of a Camellia than a Beech. Coming from so high an altitude, it may be hardy in the more sheltered parts of England. I have seen F. Cunninghamii, also a native of Australia, perfectly happy in a Cornish garden.

Physalis Francheti.—This is a glorified form of the Winter Cherry, P. Alkakengi, and for those who attach impor-

tance to size it will have exceptional charms. At this time of year there is no more effective plant in the open border than the Winter Cherry, its branches, from one to two feet high, being profusely hung with inflated fruits like tiny Chinese lanterns and colored bright orange. For room-decoration it is a most delightful plant to cut from. The new and big-fruited species above named has lately been introduced from Japan by Messrs. J. Veitch & Sons, who exhibited it this week, when it was awarded a first-class certificate. It has been described by Dr. Masters, who, while admitting its close relationship to the Winter Cherry, rightly regards it as distinct enough to warrant the above specific name, which is given in compliment to Monsieur Franchet, the eminent French botanist, who described it in 1879 as a variety of P. Alkakengi. The differences between the two are as follows: P. Francheti is an annual with fibrous roots, erect glabrous branches with large short-stalked leaves, and "lanterns" two and a half inches in diameter, whereas P. Alkakengi is perennial, with semi-decumbent, setose branches, the leaves smaller, and the lanterns from one to one and a half inches in diameter. P. edulis, the Cape Gooseberry, is not nearly as ornamental, although probably much more useful, as yielding fruit which makes good jam, etc. It is a South American plant, notwithstanding its popular name. P. Alkakengi is a native of Europe and various parts of Asia. P. Francheti was generally looked upon as the most interesting plant shown at the last meeting of the Royal Horticultural Society. It ripens seeds freely, and its fruits are fit to eat, though, perhaps, not overpleasant when raw.

Herbaceous Plants.—An exhibition of more than ordinary interest was made last Tuesday by Messrs. J. Veitch & Sons, who are now taking up a leading position among caterers for those who delight in outdoor gardening of the decorative kind. Their collection showed what a wealth of beautiful flowers could be cut from the herbaceous border in October; it included grand varieties of Kniphofia, Michaelmas Daisies, Rudbeckias, Perennial Sunflowers, Scabiosas, Pentstemons, Red Millefoil, Montbretias, Gaillardias, Anemone Japonica, red, pink and white varieties. These are all what are termed "barn-door" plants in English gardens, but they are too often left, like other "barn-door" things, to take care of themselves. Well looked after and properly cultivated they are capable of great things, as was proved by Messrs. Veitches' exhibit, compared with others I could name. The glory at this time of year of a few good gardens known to me is the Kniphofia, but it is generally overlooked, apparently for no other reason than because in severe winters it suffers or gets killed entirely.

Three Good Carnations were exhibited this week. They were Mademoiselle Thérèse Franco, a dwarf plant with large, well-formed, elegant flowers of a deep flesh-color. This, I believe, is largely grown in France, where its flowers find much favor with ladies; Miss Mary Godfrey, with a beautiful white flower, perfect in form, and having a delicious odor. The plant is a strong grower and profuse bloomer. It is regarded here as one of the very best whites; Reginald Godfrey is a worthy companion of the above, being quite equal to it in form and robustness of habit, the flowers being salmon-pink.

Vallota purpurea is too well known to require recommending, but it is not often grown as superbly as a plant shown this week from a garden in Buckingham. It was in a fifteen-inch pot, and bore forty-eight scapes about two feet high, with an aggregate of some two hundred open flowers. The plant had not been repotted for seven years, and never received any other food than rain-water.

Duke of York Rose.—Messrs. W. Paul & Son are exhibiting a beautiful bedding Rose under this name, and from what I have seen of it it is sure to become popular because of its perpetual flowering character and the bright flesh-pink color of its flowers. These are borne in clusters after the style of the Monthly Rose, on almost spineless stems about a yard high. It was shown as a new Rose at the Temple Show in June last, when it received a certificate.

Chrysanthemums have begun again, and certificates were awarded by the Royal Horticultural Society last Tuesday to several new ones. The National Chrysanthemum Society also held an exhibition of early-flowering sorts at the Aquarium this week, and, considering the backwardness of the season, the display of flowers was surprisingly good. Most of the sorts shown, however, were those which normally do not flower so early, so that they must have been forced for this exhibition. Chrysanthemums in midsummer certainly are a novelty, but, after all, they go best with November fogs and frosts.

London. *W. Watson.*

New or Little-known Plants.

A Hybrid Walnut-tree.

THE existence of some curious Walnut-trees in the neighborhood of Boston has been known for several years to students of trees in this neighborhood. My attention was first called to the fact by observing that a tree, which I had supposed was the so-called English Walnut, Juglans regia, in the grounds connected with the Episcopal School of Harvard College, at Cambridge, was not injured by the cold of the severest winters, although Juglans regia generally suffers from cold here, and rarely grows to a large size. This individual is really a noble tree; the trunk forks about five feet above the surface of the ground into two limbs, and girths, at the point where its diameter is smallest, fifteen feet and two inches. The divisions of the trunk spread slightly and form a wide round-topped head of pendulous branches of unusual symmetry and beauty, and probably sixty to seventy feet high. A closer examination of this tree showed that it was hardly to be distinguished from Juglans regia in habit, in the character of the bark or in the form and coloring of the leaves, and that the oblong nut, with its thick shell deeply sculptured into narrow ridges, was the slightly modified nut of our native Butternut, Juglans cinerea. Two other trees with the same peculiarities were afterwards found; one is a large widespreading specimen with a trunk diameter of four feet three inches about two feet above the surface of the ground and just below the point where it divides into three large limbs, standing in the grounds of Mr. Eben Bacon, of Jamaica Plain. This tree is supposed to have been planted between fifty and sixty years ago. The other has a tall straight trunk with a diameter of three feet one inch at three feet above the surface of the ground, and is growing on a farm near Houghton's Pond, in Milton, at the base of the south-eastern slope of the Blue Hills, where it was first noticed by Mr. C. E. Faxon. These three trees all resemble each other, and had evidently the same origin; no written record, however, tells their history, and there is nothing but their apparent intermediate character between two well-known species and their comparative barrenness to justify the belief that they are hybrids.

The figure of the flowering and fruiting branches of the Milton tree (the leaf considerably reduced), of a staminate flower enlarged, and of a nut of the natural size, appear in our illustration on page 435 of this issue. The bark of the trunk of these trees is deeply furrowed and rather darker than that of Juglans regia, and the bark of the branches is also darker. The branchlets, coated when they first appear with rusty pubescence, at the end of the season are glabrous, green, lustrous and marked with dark lenticels, with no trace of the brown hairs which during their first year are so conspicuous on the branches of Juglans cinerea. The terminal winter-buds are rather longer than those of Juglans regia, but resemble them otherwise in shape and in the character of their pubescent covering. The axillary buds are more generally solitary than is usually the case with Walnut-trees, an indication, perhaps, of diminished vigor, and there is no trace of the band of tomentum which on Juglans cinerea occupies, during the

Fig. 69.—Juglans regia × cinerea.—See page 434.

first winter, the space between the lower axillary bud and the top of the leaf-scar. In general outline, texture and summer coloring, the leaves of the hybrids resemble those of Juglans regia, although they are generally composed of four, instead of three, pairs of lateral leaflets, and the leaflets are obscurely and remotely serrate, and slightly pubescent, even at maturity, on the lower surface, especially on the midribs and primary veins. The leaves

remain later in the season on the branches than those of Juglans regia or Juglans cinerea, turning bright yellow before falling, while in this climate the leaves of Juglans regia fall without conspicuous change of color.

In Juglans regia the bract which subtends the staminate flower is glabrous, or nearly so; in Juglans cinerea it ends in a tuft of rufous hairs, and in the hybrids this bract is made particularly conspicuous by the snowy white tomentum which covers its extremity. The perianth of the staminate flower, however, is glabrous, or nearly so, like that of Juglans regia, and destitute of the tufts of rufous hairs which in Juglans cinerea terminate its lobes. The outer covering of the female flower is beset, like that of Juglans cinerea, with glandular hairs, and, as in that species, it is usually divided at the apex into irregular lobes, while in Juglans regia this outer perianth is most often one-lobed. The fruit, which is not produced every year, and never abundantly, is about two inches long, rather longer than broad, and covered with short, rigid, rufous hairs. The nut is obovate-oblong, acute at the apex, not acuminate, like the butternut, an inch and three-quarters long and an inch and one-eighth broad, with a deeply sculptured wall rather thinner than that of the butternut, broad thin ridges at the two sutures, the two intermediate ridges so conspicuous in the butternut being only slightly developed, and a small kernel. The nut of Juglans regia is divided at top and bottom into four cells by the growth of two dissepiments; in Juglans cinerea the nut is two-celled at the base and one-celled at the apex; the single nut of the hybrid which I have examined is four-celled at the base and three-celled at the apex, thus resembling in internal structure the nut of Juglans regia rather than that of Juglans cinerea.

A large tree of similar appearance, and with similar fruit, which stood in front of Major Ben Perley Poor's mansion on Indian Orchard Farm, in Newburyport, Massachusetts, was evidently of the same breeding. There was a family tradition that this tree had been brought from Virginia during the first years of the century. In 1888, after the death of its owner, in spite of the urgent appeal for its preservation made by the papers of Essex County, it was cut down for the lumber contained in the trunk and branches. The heart-wood of this tree was light brown, and hardly to be distinguished from the wood of Juglans regia.

Other Walnut-trees of supposed hybrid origin are known. The French botanist, Carrière, described, under the name of Juglans intermedia Vilmoriniana (*Revue Horticole*, 1863, 30), a Walnut-tree which Monsieur Vilmorin planted in his garden at Ferrières, near Paris, in 1816, and which has every appearance of being a hybrid between Juglans regia and Juglans nigra. A portrait of this tree, with its history, written by the grandson of the man who planted it, appeared in this journal a few years ago (vol. iv., 51, f. 11, 22).

Carrière at the same time described another supposed hybrid of the same parentage as Juglans intermedia pyriformis; and C. De Candolle (*Ann. Sic. Nat.*, ser. 4, xviii., t. 4, f. 41-43), under the name of Juglans regia intermedia, describes another of similar parentage which had sprung up in the garden of the Trianon at Versailles.

An immense Walnut-tree, found in 1888 by Professor J. T. Rothrock on the Rowe Farm, on the north bank of the lower James River, in Virginia, and described by him in *Forest Leaves* (ii., 133, f.), has the habit, foliage and general appearance of Juglans regia, and produces a nut which is not unlike that of the Black Walnut, although it is longer and less deeply sculptured. Of the history of this tree nothing is known. When measured by Professor Rothrock it had a trunk girth of twenty-four feet eight inches, six feet above the surface of the ground and above its greatly swollen base, and its longest branch extended sixty-seven feet from the trunk. Curiously enough, the nut of this tree exactly matches the figure of a walnut described by Carrière as Juglans regia gibbosa (*Revue Horticole*, 1860, f. 21-23), produced by a tree raised by a nurseryman at Fontenay-aux-Roses about 1848, from a nut which was supposed to have come from America. Professor Rothrock heard of what were described as similar trees on plantations along the James River; and a young tree growing near his large specimen suggested to him that this hybrid, if it is a hybrid, produces fertile nuts.

In California, Mr. Luther Burbank, in whose skillful hands the art of hybridizing has produced some wonderful results, has obtained two hybrid Walnut-trees by crossing Juglans regia and Juglans nigra with Juglans Californica. The first of these hybrids is remarkable for its vigor and growth, the size of its leaves and its habit. "Budded trees," Mr. Burbank affirms, "six years of age, under the same conditions, are fully twice as large, broad and tall as Black Walnuts at ten, or Persian Walnuts at twenty years of age. Twelve to sixteen feet growth per year is not unusual, thus the hybrid grows twice as fast as the combined growth of both its parents. The leaves, which are from two feet to a full yard in length, are clean-cut, glossy, bright green, having a surpassing sweet odor resembling that of fragrant apples, and as powerful and peculiar as that of roses or lilies." The second of these hybrids produced abundant crops of nuts of large size and excellent flavor, and promises to be a valuable fruit-tree. *C. S. S.*

Plant Notes.

Abelia rupestris.—A correspondent who has been admiring this shrub in Washington, where it is planted quite abundantly in the Capitol grounds, inquires why it is not more generally used. A sufficient reason is that it is of doubtful hardiness at points much farther north. Mr. John Saul discovered that it was perfectly hardy as much as twenty years ago in Washington, and, perhaps, with protection, it would survive the winters in the latitude of New York. Mr. Joseph Meehan says that the tips are cut a little during some hard winters in Philadelphia, but this does not happen often. Even in England it does not everywhere endure the climate, unless it is planted under the shelter of a wall or in some other protected situation. Where it will endure the climate it is a most attractive evergreen shrub, with small glossy leaves and delightfully fragrant white blossoms, shaped like little trumpets, and tinged with a very faint purplish red or pink. These flowers begin to appear by midsummer and are borne abundantly for many months. The plant, when carefully pruned, makes a compact little bush, with gracefully arched branches. It is by no means a new plant, having been introduced from China fifty years ago.

Ipomœa leptophylla.—Some roots of this perennial Morning-glory which have been displayed in the windows of a seed-store in this city have attracted much attention lately by their curious shape and immense size. The plant seems almost unknown in eastern gardens, but Mr. Andrew S. Fuller, who has grown it in his garden in New Jersey for a long time, and who is familiar with it in its home in our dry western and south-western plains, writes of it as follows: "It grows and thrives where rain is always uncertain, and sometimes where little or none falls during a period of from one to three years. But, while these long droughts continue, this dwarf Morning-glory throws up sturdy stems three or four feet high, with branches which droop gracefully and bear numerous large pinkish purple flowers three inches long and fully as wide, which open as the sun rises during several weeks in summer. The leaves are long and slender, which give the plant its specific name. How the plants live and flower in the cool dry regions of the far west is no longer a mystery when we attempt to dig one of them up. First we find a slender stem-root not more than an inch in diameter, which extends downward from five to ten inches, then there is a sudden enlargement as we reach the tuber proper, and this assumes various fantastic shapes, either growing in a single mass or forking into two or more branches, but each one invariably extending down into the hard adobe soil three or four feet, and so becoming a magazine of stored up plant-

food, to be drawn upon when needed. How large these roots may become when the plant is fifty or a hundred years old I do not pretend to know. In Gray's *Manual* it is stated that they sometimes weigh a hundred pounds. Those I have raised from seed in New Jersey have weighed about twelve pounds at the age of twelve years. If by accident the crown is broken off or killed, new buds soon form below, and it is quite possible that every part of the surface of the root is capable, under favorable conditions, of producing adventitious buds in any number." As an ornamental plant Mr. Fuller considers it well worth attention.

Cuphea Llavæ.—A few years ago the late Sereno Watson sent two seeds of this plant to Mr. W. A. Manda, with a statement that it is a native of Central America. From these seeds the stock was secured which was afterward distributed by Messrs. Pitcher & Manda, and which has since been sold by some other nurserymen under the name of Cuphea tricolor. It somewhat resembles the so-called Cigar-plant, having tubular flowers which are nearly two inches long and which show a singular combination of color, being dark purple, bright scarlet and greenish white. It is of low habit, and has proved admirable for edgings where a growth of not more than a foot in height is needed. In Forest Hill Cemetery a line of these plants set around the basin of a fountain, where they are just large enough to droop over the low stone coping, is very effective. The plant is of compact growth; it blooms incessantly; the foliage is clean, and, altogether, in color and habit, it is suitable for vases and seems exactly to fit a situation where low herbaceous growth is wanted.

Scilla lingulata.—This and its white variety, which are now flowering with Mr. Gerard, are Algerian plants, interesting as the latest ones of the genus to bloom. The flowers are small, campanulate, blue or white, not showy, and borne to the number of six to twelve on a scape three inches high. They are not valuable garden-plants; from the lateness of their flowers they will require protection, and will probably often miss flowering, owing to the difficulty of ripening their bulbs properly during our winters, when space under glass is valuable, and sunny locations can be put to better use.

Cultural Department.

Saving Seed.

SEED-DEALERS generally take precaution to keep their stock pure by careful selection, and, as a rule, farmers and gardeners will find it better and cheaper in the end to buy seed of a reliable seedsman. When care is taken in selecting, however, and seed is carefully preserved for a series of years, a good strain can be secured, which will probably give increased yields of better quality. Professor Taft, in writing for the *American Agriculturist*, gives the following directions for collecting and caring for seeds:

A series of sieves is useful both for seeds with a dry covering or pod and those formed in a fleshy fruit. Three sizes are used for each size of seed: a coarse one, to remove the larger stems, leaves, etc.; one that is just large enough to allow the seeds to pass through, and a third so fine that the seeds cannot get through, but which will allow of the removal of the dirt and lint. If large amounts are to be grown, a flail and fanning-mill will be desirable. When most of the seeds are ripe, the stems are cut off, or in some cases the entire plant is pulled. If the seeds do not ripen evenly, it is sometimes necessary to make several cuttings. In case they shell readily, the stems are placed upon papers or cloth sheets, and left in the sun until dry enough to thresh. This is done with the flail if large quantities are to be threshed, but small amounts can be rubbed out with the hand, using a coarse sieve if it is available. The seed should then be cleaned, using the fanning-mill for large quantities, or by pouring them upon a sheet and allowing the wind to remove the lighter particles. The final cleaning can be given by passing them through the sieves, although, if these are not available, good work can be done by washing them, as the good seeds will settle to the bottom, while the light ones will float. Whatever method is used, the seeds should be thoroughly dried before they are placed in bags.

When the seeds are in fleshy fruits they should be ground or mashed and placed in barrels or other receptacles to sour. In the case of cucumbers, melons, etc., the interiors only are scraped out. In from thirty to one hundred hours fermentation will have advanced sufficiently to admit of the ready separation of the pulp from the seeds. The mashed fruit is placed in coarse sieves and suspended in tubs of water. The seeds will drop to the bottom, while the light pulp will float and can be thrown out; they should then be sent through a finer sieve, and after three or four washings can be taken out, spread upon cloths and dried. It is well to wring many seeds in cloths and thus remove the surplus water. Many persons do not take the trouble to wash out the seeds, when growing a few for home use, merely scraping them out upon a piece of cloth and drying them in their pulp. Most of our vegetable seeds keep best, after being thoroughly dried, in a moderately warm, dry place. Paper or cloth sacks will answer to hold them if hung up or placed in boxes, where mice cannot get at them. The seeds of our fruits and nuts, however, would give a very low germination if treated in this way, and care must be taken that they are not exposed to drying influences for any length of time. They may be planted at once after they are gathered, or, after being partially dried, they may be placed in thin layers in a box of sand. This stratification prevents the loss of water, and they will be in good condition for planting in the spring. It will be found desirable—especially with the fruits—to place the boxes out-of-doors during the winter, and thus expose them to the action of frost. In the case of the Peach and other stone fruits, it is often well to crack them with a hammer if the frost has not done its work.

Indoor Work in Autumn.

THE work of lifting, potting and storing tender plants that have been used for outdoor ornamentation during the summer is now finished, and intelligent care given to the indoor garden now will prevent disappointing results later in the season. Caladiums, whose brilliant leaves have contributed so much to the adornment of the conservatory during the summer, will now be ripening their growth, and this process may be hastened by withholding water from them for a time, and turning the pots over on their sides beneath the staging in a warm greenhouse. After the leaves are all gone a neat method is to shake out the tubers from the soil in which they have been growing, and to place them in pans or boxes of dry sand; these should be kept in a warm and tolerably dry place until the following spring, the object being to keep the tubers plump and sound without making a premature growth during the winter.

A similar plan can be used for Gloxinias, Tydæas, Gesneras and Achimenes, all of which can be stored in dry sand for the winter, though the delicate rhizomes of the Achimenes must be carefully shaken out, for they are easily broken.

The beauty of the floral display during the winter and spring is greatly increased by the use of some Pancratiums, Crinums and hybrid Hippeastrums, all of which can be brought into flower at stated periods by using a little judgment in resting the plants. For this purpose the bulbs should not be so dried off that they lose all their leaves, as these plants are not necessarily deciduous; but a smaller supply of water should be given for a time, while the plants have full light and a lower temperature. Another point to be remembered is that frequent repotting is not required for most of them, and after they have grown to flowering size an occasional top-dressing and some liquid manure will carry them through for two or three seasons, providing the plants are healthy to begin with.

Eucharis Amazonica, another evergreen bulbous plant, does well with judicious treatment. With the resting periods properly regulated, two to four crops of flowers may be secured in a year, one of which can be timed for the Christmas season.

To have flowers of Lilium Harrisii at the holiday season, the plants should be grown so that the buds show at least six weeks before the time when the flowers are desired.

Tulip bulbs are received at about this time, and they should at once be planted in the pots or boxes in which they are to bloom. Without a good root-growth the flowers will not amount to much, and the same rule applies to most of the spring-flowering bulbs.

The propagation of various stove plants is now in order, and this is a good time to begin getting up a stock of Crotons for next season's bedding and for other decorative uses to which these beautiful plants are so well suited. The past season has been highly favorable for outdoor Crotons, at least in the eastern states, and the use of these plants out-of-doors will, no doubt, be more general next season. Crotons usually root

quickly if they are not allowed to become very dry, and the foliage and, in fact, the whole cutting will be invigorated if allowed to stand in water for an hour before it is planted in the cutting-pot. It is the small details of practice such as this which count in the management of an establishment, and which are worth remembering.

Mignonette for winter-cutting should now be showing bloom. If grown in pots it will stand a reasonable amount of manure-water and be helped by it. The finest spikes of Mignonette are generally produced from plants that are set out in a bed, but to secure the greatest size it is needful that the plants be watched and skillfully disbudded, so as to throw the full strength of a shoot into one spike.

Holmesburg, Pa. *W. H. Taplin.*

The Linarias.

AMONG the meritorious hardy herbaceous plants in bloom at present are a few of the numerous species of Linaria. They combine profusion and continuity of bloom, being literally covered with flowers from early summer until severe frosts, with the exception of a slight resting period during the middle of July. They are admirably adapted to withstand drought and neglect, to which many plants easily succumb. They have a tendency to produce seed very soon after they begin to flower, especially during drought, if they are not artificially watered; but, with ordinary vigilance in removing the ripening capsules, no more unique or satisfactory flowering plants are found in the herbaceous borders at this season.

The genus consists of over one hundred species, many of which show a marked variation of color in their flowers, especially when grown in soils of different composition. After the first season the biennial and perennial sorts display more intense shades of color and larger flowers, a more healthy deep green color in the foliage and a thriftier habit in general. When planted in early spring in a good, stiff, fibrous loam, and exposed to the full sunlight the entire day, they thrive exceedingly. Light soil and summer planting are not recommended. They are very easily propagated by seed sown in a porous, fibrous loam in March or April. The young plants should be pricked out into pots as required, and not allowed to become pot-bound. In early spring they should be planted out when sufficiently hardened off and as soon as the soil is in proper condition. This method is preferable to fall-sowing in the open ground and protection during the winter.

Pre-eminent in the genus is Linaria Hendersonii, var. ericoides, a sturdy, dense grower, bearing a profusion of racemose, rich, light purple flowers from three-eighths to half of an inch in length, with the spur included. The upper and outer surface of the corolla is of a deeper shade than the inner, and is striated with long, narrow and dark stripes. The spur, lower surface of the corolla-tube and three-lobed lip are lighter than the upper surface of the corolla-tube, and devoid of any prominent markings. The light green leaves are disposed in whorls of four and five at the base, becoming alternate as they approach the apex, linear-lanceolate, acute, glaucous, sessile, one-half to one inch long and one-eighth to one-quarter of an inch broad. The plants average from six to twelve inches in diameter and seven to thirteen inches in height.

Linaria purpurea is a close rival of the variety just named, differing from it in that the whole corolla and spur are striated; a somewhat regular network of dark streaks is plainly visible on the inside of the petals, and the palate has a denser and longer beard. The main difference, however, is its height, which is from two and a half to four feet, with a proportionate diameter of from twelve to fifteen inches. The whole plant is completely covered with bloom, equally distributed from an average of ten inches from the soil to its summit. Although the flowers vary considerably in color, they are generally a shade darker than those of L. Hendersonii. The foliage is linear, one and a half inches long, acute and glaucous. If this species is not given full sunlight it flowers sparingly, grows spindlingly, and soon assumes an oblique or weak habit, which makes the objectionable practice of staking necessary. Groups of this species three or four feet in diameter and bordered with one or two rows of L. Hendersonii, var. ericoides, make admirable additions to a landscape when properly disposed. The absence of any objectionable characteristics, such as dying down in early summer and straggling growth, renders its use in bold and prominent situations altogether safe and satisfactory. Its flowering season continues from the latter part of May until severe frosts, with the exception of the July rest. It is doubtfully perennial.

Linaria repens is a perennial of a weak habit; the stems are usually loosely arranged and decumbent; the leaves are slightly larger than those of L. purpurea, soft in texture and glaucous. Unless the plant is well established early in the season the small light purple flowers are sparingly produced, but its most objectionable feature is its weak constitution. It grows from five to ten inches high and eight to sixteen inches in diameter, with an unsymmetrical form.

Linaria genistifolia is of a fairly sturdy habit, quite dense, and an excellent bloomer. Its foliage is from one to three quarters of an inch broad and three-quarters to two inches long, thin, concaved, glaucous and usually three-nerved. The plant grows from eight to twelve inches high and ten to twelve inches in diameter, and occasionally displays a tendency to be decumbent. The large, pure, pale yellow flowers, with the exception of the straight, gradually tapering spurs, are more Genista-like than is its foliage, though this would hardly be surmised from its specific name. The plant is perennial.

Linaria supina is a large yellowish flowered perennial species, with an extra-long curving spur and a large erect upper lip. The leaves are one-fourth of an inch broad and one-half to one inch long. The short pediceled and variable blooms develop along an extremely short internoded rhachis, which causes it to assume a cluster-like appearance from a short distance. The flowers are not as pure in color, and are often tinted with orange in the throat; the plant is neither as dense nor as sturdy as L. genistifolia.

Linaria biennis detests the sun's rays, and in this particular is an exception to the genus. The foliage is sickly, pale-looking and dry throughout the season, even if placed in northern exposures, so that this species is not an attractive one.

St. Louis, Mo. *Emile Mische.*

Notes from Baden-Baden.

AMONG Kniphofias of recent introduction K. pauciflora deserves special notice. It is a dwarf plant, somewhat like K. Macowanii, has grassy foliage, and forms a bush; from this the numerous flower-spikes rise to two feet, showing about thirty medium-sized flowers of a bright citron-yellow color in a gracefully nodding or pendent position. Its principal flowering time is May, but it flowers for a second time in September. I consider this a very desirable acquisition. K. Nelsoni, of which Mr. Nelson speaks with enthusiasm, is very similar to K. pauciflora, but its color is said to be an indescribable scarlet. Owing to the cold rainy weather which has prevailed in middle Europe for two months past it is only now throwing up its flower-spikes.

Colchicum giganteum is another novelty now in full glory. There are as many as six flowers from one bulb; they resemble those of C. speciosum, but are of a better shape, more massive and of a deeper color. Among autumnal Crocuses, C. speciosus, var. Aitchisoni, takes first rank, the very large flowers having a delicate lilac color.

Among shrubs, Cratægus Korolkowi, syn. C. Tartarica majus, is a striking object; the small tree has beautiful dark green massive foliage, hidden by the large bunches of big crimson-colored fruits, each of which is of the size of a Myrobatan plum.

Baden-Baden. *Max Leichtlin.*

Forcing Strawberries.

STRAWBERRY-PLANTS, in pots for winter forcing, should now be kept rather dry to induce them to rest. Before severe frosts the pots should be plunged their entire depth in ashes or sand to prevent their being cracked by frost. If an early crop of strawberries is desired, the plants may be put in the greenhouse to start slowly early in November; but it is better to leave the plants out-of-doors a month longer, or until they have been well frozen through, as they are then more easily forced. When taken inside, the plants should be placed in a light house, not more than eighteen inches from the glass; if the benches are much further from the glass, temporary shelves should be erected for them. They should be started slowly at first and watered sparingly until their growth is well begun, when the supply of both heat and water should be increased. A night temperature of forty-five to fifty degrees is quite sufficient at first; this should be increased eventually to sixty degrees. A rise of about fifteen degrees on bright days should be allowed. The atmosphere should be well charged with moisture to keep down red spider, which is always a ready enemy to Strawberries. When the plants come into flower artificial impregnation is generally necessary; a small camel's-hair brush is very useful for conveying the pollen from the stamens to the pistil; if possible, a bright day should be chosen for the operation, when the pollen is

dry. Care should also be taken at this stage not to wet the plants overhead. When the fruit is well set it should be thinned out to about twelve fruits to a plant, which is a sufficient crop to a six-inch pot, and this is the best size for general use. Occasional applications of weak liquid-manure will greatly assist the development of the fruit.

Tarrytown, N. Y. *William Scott.*

Correspondence.

The Persimmon.

To the Editor of GARDEN AND FOREST:

Sir,—I quite agree with E. P. P. (in your issue for October 24th) as to the value of our native Persimmon, whether cultivated for its fruit or merely for its picturesque and ornamental effect as a tree. I have grown the Persimmon on Long Island for twenty years, and have tried varieties from several western and southern states. The best tree I have is one given me by the late William Cullen Bryant in 1867. Mr. Bryant was an enthusiastic cultivator of Persimmons, and he had great faith in their future development and improvement, and he even believed they would become formidable rivals of the Kaki, or Japanese Persimmon. The particular tree of which I speak was one of many obtained from seed which grew in the southern Ohio valley, and Mr. Bryant considered it superior to any from Missouri or elsewhere.

My tree has been generously cultivated and root-pruned. It is now fifteen feet in height, and produces fruit measuring five inches in circumference. In proportion as the fruit is improved its astringency diminishes, the pulp increases in volume and sweetness and the seeds diminish in number. This is also true of the Japanese Persimmon, the largest and finest specimens of which often have no seeds at all.

One male tree is sufficient for a large Persimmon plantation. The male tree holds its leaves longer than the female, and it is still fresh and green (October 25th), while the female trees are already bare.

Mr. Samuel Miller, of Bluffton, Missouri, Vice-President of the Missouri State Horticultural Society, and an experienced grower of this fruit, has recently sent me fruit of six varieties, all differing in size, shape and flavor, but all of excellent quality.

Flushing, L. I. *J. W. B.*

Birds which Injure Apples.

To the Editor of GARDEN AND FOREST:

Sir,—In the note by Mr. Fred W. Card, on page 414 of your issue for October 17th, on birds injuring apples in Nebraska, the common crow is not mentioned. This bird is often troublesome in eastern orchards. In the autumn, when the crows congregate in considerable numbers, and usually frequent open fields and pastures, they destroy large numbers of injurious insects; but they also sometimes betake themselves to Apple-orchards, and in a short time will destroy the market value of large quantities of the finest fruit in the tops of the trees. Generally a deep hole is pecked in the uppermost, and therefore the brightest-colored side of an apple, and the damaged specimen either remains on the tree or is broken off. Sometimes, but not often, the fruit is carried off. The softer and brighter-colored apples, like Fameuse, Astrachan, Duchess, Alexander, St. Lawrence, and the like, usually suffer the most. As a rule, however, the crows may be frightened away by some of the well-known devices, and they should be regarded as more useful than injurious. Incidentally it may be stated that squirrels often make holes in apples, and more frequently in pears, but this destruction is apparently done for the seeds rather than from any liking for the fleshy part of the fruit.

Arnold Arboretum. *J. G. Jack.*

A Double May-weed.

To the Editor of GARDEN AND FOREST:

Sir,—Last summer a friend found some plants of May-weed, Anthemis (Maruta) Cotula, which had double flowers. The heads were unusually large, and the flowers were ligulate almost to the centre, only a trace of yellow being visible. This doubling up of flowers is not always a beautifying process, but this imported weed has never been called a beautiful plant, and the flowers of this new development are really handsome. Besides these quite double flowers there were others which had two or three or more rows of ligulate florets. The individual heads of each plant were invariably alike, that is, they were all double, all single, or all semi-double. I am told that these double flowers have been seen hereabout occasionally for several years, but I have not seen the fact recorded. I sowed some of the seeds taken from the double flowers, and while many of the plants reverted to the type, some of the seedlings showed double heads, and it seems plain that by continued selection a stable variety may be secured.

Harmonsburg, Pa. *Bessie L. Putnam.*

Recent Publications.

The Tannins, a Monograph on the History, Preparation, Properties, Methods of Estimation and Uses of the Vegetable Astringents. By Henry Trimble, Professor of Analytical Chemistry in the Philadelphia College of Pharmacy. J. B. Lippincott Company. Philadelphia. 1892-94.

This useful book, of which the first volume appeared two years ago, has recently been completed. The first volume, divided into two sections, is devoted to the discovery of the tannins and to an account of gallotannic acid, the second to the results of investigations made by the author on the astringent principles of nine species of Oaks, on the Mangrove, Canaigre and the Chestnut.

It will surprise many of our non-professional readers to learn that it is only within the last hundred years that tannin has been recognized as a distinct substance or class of substances, for previously to that time the histories of leather, galls and Oak-barks are the only sources of information regarding the development which led to its discovery. As early as 1763 Dr. William Lewis, in his *Philosophical Commerce of the Arts*, calls attention to the presence in certain vegetable infusions of a substance which, mixed with green vitriol, produced a "a deep black liquor of most extensive use for dyeing and staining black. The power by which they produce this blackness and their astringency, or that by which they contract an animal fibre, seem to depend upon one and the same principle, and to be proportional to one another."

This apparently is the earliest account of tannin, although the facts he states were well known before his time. But the existence of tannin was really established, and gallic acid became of secondary importance as the constituent of galls and in tanning by the investigations of European chemists in the last years of the last century, the first separation of tannin in a pure condition having been accomplished by Proust in 1798.

The most valuable Oak-galls are those produced on a south European and western Asian species of Oak, Quercus Lusitanica, by the puncture of small insects (Cynips Gallæ tinctoriæ) on the young buds of the branchlets. In these punctures the eggs of the insect are deposited, and around them a mass is rapidly formed, which, in its mature state, becomes the Oak-gall or nut-gall of commerce. The most valuable galls at the present time are collected in Mesopotamia and shipped from Bombay to London; they are known in commerce as Levant galls. The best-known variety in this country comes here under the name of Aleppo or Turkish galls, being shipped from Smyrna. The best galls, according to Dr. Trimble, are gathered before the insect has matured. Galls of rather inferior quality are produced in Japan on a species of Rhus, and in Europe from the two varieties of Quercus Robur, and also from Quercus Ilex and Quercus Cerris. The galls which are produced on nearly all our species of Oaks have little commercial value, and American tannin material is practically obtained from the bark of various trees or from the thick tuberous root of the Canaigre, or Rumex hymenosepalus, a species of Dock common in New Mexico and Arizona, where it grows near the beds of streams in exceedingly arid regions, promising to become an important article of commerce.

In the second volume Dr. Trimble describes the properties of various tan barks, especially the American Oaks, his description being accompanied with carefully prepared drawings of the fruit and leaves. A chapter is devoted to the tannin obtained from the Mangrove, Rhizophora, a common inhabitant of the shores and islands of southern Florida and all other tropical maritime coasts. Curiously enough, in this exhaustive work no account is

given of the Hemlock-barks, which are used in immense quantities in the eastern states and in Oregon and Washington in tanning, or of that of the Douglas Fir, botanically related to the Hemlock, and now valued in those parts of the country where this tree abounds for the tannin contained in its thick bark.

The value of the work is increased by the very full and complete index to the literature of Tannins, beginning with 1791, when two papers on the subject were published, down to the year 1893.

Notes.

The next meeting of the American Pomological Society will be held in San Francisco on the 16th, 17th and 18th of January, 1895. Members visiting California will be the guests of the State Horticultural Society.

Few flowers of comparatively recent introduction have so quickly attained popularity as those of Cosmos, which are now to be found on almost every sidewalk flower-stand with Chrysanthemums and Carnations. They have a delicate and fugacious look, but there are few cut flowers which last so long when placed in water.

The fact that an English nurseryman sends to this country, and pays $500 for a small plant of the yellow-flowered variety of Cypripedium insigne, shows that the trade still believes that the market for extraordinarily rare and peculiar Orchids is still likely to be maintained, in spite of the generally hard times which are affecting all parts of the world.

The windows of many of the flower-stores in this city have lately been singularly attractive. Of course, some windows are overloaded and show something like barbaric profusion rather than true refinement, but in one or two of them last Saturday afternoon there appeared a blending of colors in soft harmony, an absence of everything incongruous and superfluous, a delicacy and dainty grace which revealed a taste and skill never displayed here in similar places half a dozen years ago.

The season for green fruit from California is about over, although forty car-loads, mostly of grapes, were sold here at auction last week. Taking the year through, the shipments from California have exceeded those of last year by one thousand car-loads of green fruit, one thousand car-loads of canned fruit and vegetables and 450 car-loads of raisins. Notwithstanding this increased product, the depression of trade, the great railroad strike and other influences have kept prices down, so that the actual returns to growers were not as great as they were last year.

Grapes of the best quality from California are still abundant, but they are bringing somewhat higher prices, partly on account of the scarcity of Almeria grapes, importations of which will hardly amount to half as many barrels as were received last year. Florida oranges are beginning to show good color, although they are not yet as sweet as the Jamaica fruit. The best grades of King apples, Northern Spies and Fall Pippins bring good prices, in spite of the continued large shipments to Europe. One hundred thousand barrels were sent to England last week, and an equal amount will probably be shipped the present week. The fruit has been bringing in the English markets as much as it would sell for here. Good Newtown Pippins netted $4.50 a barrel, and it is interesting to note that some of them came from Oregon.

In places where the garden has a gravelly or other porous, well-drained subsoil, a simple plan to keep a few vegetables over for family use is to take both heads from a few sugar-barrels and sink them in the ground, leaving their tops about six inches above the surface. The practice of Mr. C. L. Allen, who recommends this method, is to fill the barrels about half-full with vegetables, and then to place over them an ordinary barrel cover. The warmth from below keeps out frost from above unless the temperature falls to zero, when some old matting or other material can be thrown over the tops of the barrels, to be removed as the vegetables are needed. He has kept beets, turnips, carrots and parsnips in this way until the middle of April, and the last that were taken out were as fresh as when they were put away in the fall. Cauliflower and cabbage can also be kept perfectly in the same manner.

It has been stated that the admirable Narcissus known as Bicolor Horsfieldii was a chance seedling, but a correspondent of the *Gardeners' Chronicle* writes that the flower was obtained by crossing Narcissus bicolor with pollen from a fine flower of Narcissus Pseudo-narcissus, and that from the same batch of seedlings two or three other good varieties came, which are still in existence. Horsfield himself, although a weaver, was an excellent botanist and a skillful cultivator, and he is known to have obtained other plants by cross-fertilization, so that it is altogether probable that the famous flower which bears his name, and which has been called "King of Daffodils," is a genuine memorial of his skill, and not a lucky accident. When he died in 1854 he had a stock of twenty-eight blooming or full-sized bulbs, and nine smaller ones, which were sold for the benefit of his widow.

Farmers who hold their crops for higher prices do not always consider the shrinkage which many products undergo, so that the advance in prices, if it comes, is often counterbalanced by loss in quantity from various causes. A correspondent of the *American Agriculturist* states that a farmer last autumn on Long Island, as an experiment, put in a storage warehouse one hundred bushels of potatoes which weighed sixty pounds to the bushel. In April he weighed the same potatoes before sorting out those which had become unsalable, and found that he had eighty-three bushels. Examination showed that many of the tubers which had been large enough to sell in the autumn, were now too small to sell, and, besides this, some were rotting, so that when these were taken out he had seventy-eight bushels to sell instead of one hundred. This was a loss of twenty-two per cent. in quantity, besides the cartage he could have saved if he had sold the potatoes from the field, not to speak of the interest of his money for six months.

Last year we spoke of the fact that a Siberian Knotweed, Polygonum Sachalinense, had been recommended by well-known authorities, like Monsieur Charles Baltet, for example, as a forage-plant for dry climates. In speaking of this matter we noted the fact that in Europe some experimenters had also recommended Polygonum cuspidatum as a forage-plant for similar situations; but inasmuch as this plant is a rampant weed in Central Park, which flourishes particularly in moist deep soils, and is altogether too tough for succulent forage, we suggested that while P. Sachalinense might prove valuable for ensilage, it would hardly supersede Indian Corn for green fodder in the Corn belt of this country. Nevertheless, some nurserymen at once began to propagate and advertise the new forage-plant, and have been selling P. cuspidatum for P. Sachalinense. Many buyers of this stock will be disappointed, but we should be glad to publish the experience of some one who has tested the genuine article. We observe that the Bureau of Agriculture of South Australia doubts whether the plant is suitable for any but rich soils and moist localities, and adds that in such places Lucerne, Clover and the usual cultivated fodder-plants would give better returns. Some of our western correspondents, who had been growing this P. Sachalinense as an ornamental plant, reported that it seemed to withstand fairly well the droughts of August and September, when pasturage is nearly always short. Do the trials on a larger scale made this year confirm this impression?

The distortion of the leaves of Peach-trees, which is known as leaf-curl, and the abnormally inflated fruits, popularly called plum-pockets or plum-bladders, on some other species of Prunus, are both caused by parasitic fungi belonging to the family of Exoasceæ. Professor Atkinson, of Cornell University, has been making a study of these fungi, and he has published the results of his investigation in a bulletin illustrated with twenty plates containing eighty figures. Fifteen species of Exoascus are described here as growing on various species of Prunus, with illustrations of the method in which they curl the leaves, enlarge the fruits, cause "witch's-broom," and do other damage. Professor Atkinson does not give information which will enable fruit-growers to control these diseases because the experiments yet tried are not so definite and conclusive that remedies can be given with confidence. He hopes, however, that this contribution to the knowledge of these fungi, with the characteristics of their work, will lead to a more intelligent line of experimentation. It should be borne in mind that these fungi possess a mycelium which lives in buds or branches of the trees during the winter when they have once become affected, so that it is likely to show the disease more or less every year. Of course, since the mycelium is perennial in the young branches, no buds should be taken from infected trees for budding nursery-stock or orchard-trees. When only a few branches of trees are affected, pruning some distance below the diseased portion might be tried, especially in the case of those trees where the leaf-buds and twigs are deformed.